NOTEWORTHY COLLECTIONS

California

Wolffia arrhiza (L.) Horkel ex Wimmer [Lemnaceae].—USA, CA, San Diego Co., San Dieguito River, pond at base of Lake Hodges Dam spillway (33°2′N, 117°8′W), 76 m, 4 Dec 1988, *Armstrong 1297*. Forming dense colonies at water surface with *Azolla filiculoides* and *Lemna minuscula*. Associated with *Typha latifolia, Ludwigia peploides* subsp. *peploides, Pluchea odorata* var. *odorata, Cyperus erythrorhizos,* and *Berula erecta*. Verified by E. Landolt 19 Dec 1988.

Previous knowledge. Known from Europe, SW Asia, Africa and E Brazil. A minute, free-floating rootless angiosperm, barely visible without magnification. Often associated with *Lemna, Spirodela,* and *Azolla*. CA collections from Oso Flaco Lake, San Luis Obispo Co., reported as *W. arrhiza* by Mason (1957), have been annotated by Landolt as *W. columbiana*. Contrary to Daubs (1965), another similar CA sp., *W. globosa* (syn. *W. cylindracea*), is not synonymous with *W. arrhiza*. All 3 spp. belong to the Section *Wolffia* and are undoubtedly closely related. The upper surface of *W. arrhiza* is dark green and conspicuously flattened, with 15–100 stomata (Fig. 1). The upper surfaces of *W. columbiana* and *W. globosa* are transparent green, generally with 1–12 stomata. Although fronds of *W. globosa* are flat-topped, they are more cylindrical and much smaller, generally only 0.4–0.7 mm long (compared with 0.8–1.3 mm for *W. arrhiza*). The other conspicuously flat topped sp. in N. Amer., *W. borealis,* is occasionally misidentified as *W. arrhiza*. It can readily be distinguished by its brown pigment cells, visible on dead plants. (Herbaria consulted: RSA, SD, UC, ZT; published sources: Landolt, Veröff. Geobot. Inst. ETH 71. 1986; Armstrong and Thorne, Madroño 31:172–179, 1984; Daubs, Ill. Biol. Monogr. 34, 1965).

Significance. First authenticated record of *W. arrhiza* in N. Amer. This population is probably naturalized due to its close proximity to a nearby biological supply company. Readily introduced through fish and aquarium cultures, it is to be expected elsewhere in CA. Because of variable frond characteristics it is easily mistaken for the native *W. columbiana*.

Wolffia brasiliensis Weddell [Lemnaceae].—USA, CA, Butte Co., Sacramento River, Chico Landing Ramp (at Chico Landing Site), Bidwell River Park w. of Chico (39°43′N, 121°56′W), 30 m, 6 Nov 1988, *Oswald 3723*. Scattered individuals in shallow slough in an old channel of the Sacramento River. Associated with a dense population of *Lemna turionifera* and *L. minuscula*. Verified by E. Landolt 30 Nov 1988.

Previous knowledge. Known from E and SE US, the Caribbean region, C. and S. Amer. A minute, free-floating rootless angiosperm, barely visible without magnification. Often associated with *Lemna, Spirodela, Wolffiella,* and *Azolla*. Distinguished from all other *Wolffia* spp. by prominent conical papule in center of upper surface (Fig. 2). This species and *W. borealis* belong to the Section *Pigmentatae*. Dead plants of both spp. are dotted (punctate) with brown pigment cells. The pigment is a phlobaphene-like substance formed by oxidation and polymerization of phenolic compounds when the plant dies. The upper surface of both spp. is dark green, conspicuously pitted with numerous stomata. The lower, submersed surface is transparent green. Commonly published synonyms for *W. brasiliensis* are *W. papulifera* Thompson and *W. punctata* Grisebach. The *W. punctata* of some American authors (not Grisebach) refers to *W. borealis*. The confusion between the two spp. apparently originated from the type specimen of *W. brasiliensis* which did not show the typical dorsal papule. (Herbaria consulted: RSA, SD, UC, ZT; published sources: Landolt,

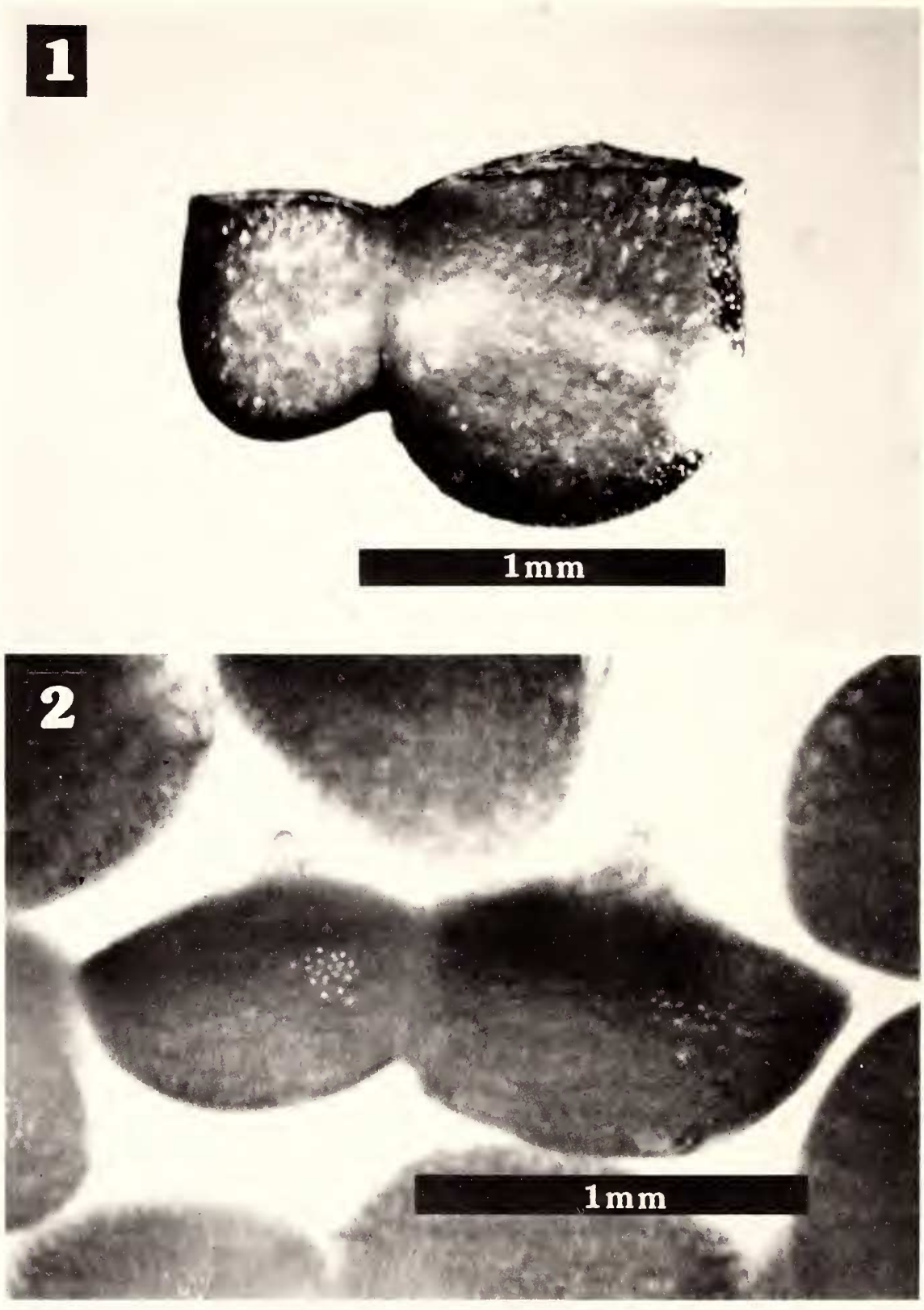

FIG. 1. Lateral view of budding *Wolffia arrhiza* showing the conspicuously flattened dorsal surface.

FIG. 2. Lateral view of budding *Wolffia brasiliensis* showing conspicuous dorsal papule.

Veröff. Geobot. Inst. ETH 71. 1986; Armstrong and Thorne, Madroño 31:172–179, 1984).

Significance. First record of *W. brasiliensis* in CA, a NW extension of 2400 km from the Gualalupe River near Hunt, Texas, Kerr Co. Small and flowering plants without a central papule are easily mistaken for *W. borealis.* Since papules are not always visible in herbarium samples, it is recommended that dried fronds be boiled in order to obtain typical shape. The pointed, upturned apex of *W. borealis* is also more easily recognizable in boiled specimens.

Five native and naturalized spp. of *Wolffia* are now known from CA: *W. brasiliensis, W. borealis, W. columbiana, W. globosa,* and *W. arrhiza.*—WAYNE P. ARMSTRONG, Palomar College, San Marcos, CA 92069.

COLORADO

ENNAEPOGON DESVAUXII Beauv. (POACEAE).—Montrose Co., sandy soil in slick rock areas, Sewemup Mesa (T49N R18W sect. 33, 38°30′N, 109°55′W), 1750 m, 19 Sept 1987, *Kelley and Ballard 87-106A* (Mesa State College Herb., CS).

Previous knowledge. On dry sandy soil on open desert flats in CA, AZ, NM, TX, Mex, and S. Am.

Significance. First record for this species in CO, representing a range extension eastward from nearest known localities in Grand Co., UT (Welsh et al., Great Basin Nat Memoirs 9:729, 1987).

ERAGROSTIS SPECTABILIS (Pursh) Steudel (POACEAE).—Montrose Co., sandy soil in slick rock areas, Sewemup Mesa (T49N R18W sect. 33, 38°30′N, 109°55′W), 1750 m, 26 Aug 1987, *Kelley 87-104* (Mesa State College Herb., CS) (verified by Ronald L. Hartman).

Previous knowledge. Sandy soil ME to MN and ND, S to FL and AZ, also W.I. and E Mex.

Significance. First record for this species in the Great Basin.

LYCURUS PHLEOIDES Kunth (POACEAE).—Montrose Co., sandy soil in slick rock areas, Sewemup Mesa (T49N R18W sect. 33, 38°30′N, 109°55′W), 1750 m, 26 Aug 1987, *Kelley 87-103* (Mesa State College Herb., CS).

Previous knowledge. Sandy soil E CO, SW KS, S to TX, AZ, NM, Mex, S UT.

Significance. Although common in the eastern plains of CO, this is the first record of the species in W CO, representing a range extension NE from known localities in S UT.

PHACELIA CONSTANCEI Atw. (HYDROPHYLLACEAE).—Mesa Co., NE-facing slopes in gypsum soils, NW corner of Sinbad Valley (T49N R19W sect. 5, 38°33′N, 109°02′W), 1750 m, 29 Nov 1987, *Kelley and Ballard 87-127* (Mesa State College Herb.).

Previous knowledge. Common on soils derived from Moenkopi formation in SE UT and NE AZ. In CO previously known only from Gypsum Gap, San Miguel Co. (38°02′N, 108°39′W).

Significance. This represents a second locality for this relatively rare species in CO and is a range extension of 80km NNW of Gypsum Gap.

POLIOMINTHA INCANA (Torrey) A. Gray (LAMIACEAE).—Montezuma Co., near state line east of Aneth, [UT] on sandy soil (37°30′N, 109°00′W), 1830 m, 19 Jun 1968, *Harrington 10107* (CS).

Previous knowledge. On sandy soil in SE UT, NC and E AZ, NM, W TX, and Chihuahua, Mex.

Significance. First record for CO and range extension immediately E from adjacent populations in San Juan Co., UT.

POLYSTICHUM SCOPULINUM (D. Eaton) Maxon (ASPIDIACEAE).—Moffat Co., east side of Cross Mountain Canyon (T6N R98W sect. 1), 1890 m, 16 Sept 1983, *J. C. Parks 914.*

Significance. First CO report of this species and an extension of ca. 270 km E of the nearest known site in Salt Lake Co., UT.—WALT KELLEY, Department of Biology, Mesa State College, Grand Junction, CO 81501 and DIETER H. WILKEN, Department of Biology, Colorado State University, Fort Collins, CO 80523.

ANNOUNCEMENT

NEW PUBLICATIONS

MICKEL, J. T. and J. M. BEITEL, Pteridophyte flora of Oaxaca, Mexico, *Memoirs of the New York Botanical Garden,* Vol. 46, pp. [i–ii], 1–568, 15 July 1988, ISSN 0071-5794, ISBN 0-89327-323-6, $94.85 U.S., $96.80 foreign, postpaid (from Scientific Publications Office, The New York Botanical Garden, Bronx, NY 10458-5126). [For review see R. G. Stolze, *Taxon* 38:446–447.]

PHILLIPS, R. C., and E. G. MEÑEZ, Seagrasses, *Smithsonian Contributions to the Marine Sciences,* no. 34, pp. i–v–[vi], 1–104, 1988, ISSN 0196–0768 (for price and address see entry for Funk and Mori). [On all known taxa of seagrasses (12 gen., 48 spp.), with keys, 4 tables, 57 figs., 39 maps, 5-p. biblio. summarizing general and current info on morphology, ecology, biology, distribution, and evolution.]

RICKETTS, E. F., J. CALVIN and J. W. HEDGPETH, *Between Pacific tides,* 5th ed., rev. by D. W. Phillips, Stanford University Press, Stanford, CA 94305, 1985, xxvi, [i], 652 pp., illus., ISBN 0-8047-1229-8, $29.50, ISBN 0-8047-1244-1, $22.00 (both hardbound). [Previous eds. 1939, 1948, 1952, 1962, 1968; a major revision of Rickett's (1896–1948) classic. The less expensive version is a recently issued ocean manual with the dust jacket built into a plasticized cover.]

ROWLEY, G. D., *Caudiciform & pachycaul succulents: Pachycauls, bottle-, barrel- and elephant-trees and their kin: A collector's miscellany,* Strawberry Press, 227 Strawberry Dr., Mill Valley, CA 94941, 1987, xiii, [i], 282 pp., illus. (most color), endpaper photos, ISBN 0-912647-03-5 (hardbound), $65.00. [With superb photos of various desert plants. For review see R. Schmid, *Taxon* 38:450.]

RUSHFORTH, K. D., *Conifers,* Facts on File Publications, 460 Park Ave. S., New York, NY 10016, 1987, 232 pp., 8 pls. (color), text illus. (B&W), ISBN 0-8160-1735-2 (hardbound), $24.95. [Publ. in Britain by Christopher Helm, Bromley. With much on cultivation and a 148-page gazetteer for nearly 600 spp. For review see J. A. Weber, *Michigan Bot.* 27:95.]